



Iatrogenic Induced Periodontal Abscess: A Diagnostic and Treatment Dilemma. - A Case Report

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Abstract

Background: Periodontal abscesses are localized acute bacterial infections within the periodontal tissues, often resulting in significant discomfort and posing diagnostic and therapeutic challenges. It is the third most frequent dental emergency, representing 7–14% of all dental emergencies, which can be iatrogenic in nature, and was also incorporated into the latest 2017 classification of periodontal abscesses. This case report highlights a rare presentation of a periodontal abscess caused by iatrogenic factors following surgical extraction of a third molar.

Case Report: A 28-year-old female presented with a three-week history of persistent purulent discharge from the distal aspect of the lower right second molar, two years post-surgical extraction. Clinical examination revealed an 8 mm periodontal pocket with associated purulent discharge but no associated swelling. Radiographic findings confirmed a localized bony defect distal to the molar. Exploratory open-flap surgery identified a cortical bone sequestrum with associated granulation tissue, which was removed, followed by debridement and primary closure of the flap. The patient achieved complete resolution of symptoms with satisfactory healing on follow-up.

Conclusion: This case report emphasizes that periodontal abscesses may develop following surgical extractions, presenting notable challenges in diagnosis and treatment. Effective management of such rare cases requires timely and accurate diagnosis and elimination of the underlying etiologic factors.

Keywords: Periodontal Abscess; Iatrogenic; Exploratory Open-Flap; Debridement

Introduction

Abscesses of the periodontium are localized acute bacterial infections that are confined to the tissues of the periodontium [1]. Periodontal Abscess (PA) can specifically be defined as a localized accumulation of pus located within the gingival wall of the periodontal pocket, with an expressed periodontal breakdown oc-

curing during a limited period of time, and with easily detectable clinical symptoms [2]. Abscesses of the periodontium have been classified primarily based on their anatomical locations in the periodontal tissue.¹ There are four types of abscesses associated with the periodontal tissues: gingival abscess, pericoronal abscess, combined periodontal/endodontic abscess, and periodontal abscess.

Among all the abscesses of the periodontium, the periodontal abscess is the most important, as it is a common complication of periodontitis and often represents the chronic and refractory form of the disease.¹ The condition can be chronically distressing for patients and challenging for clinicians [3].

Periodontal abscess is the third most frequent dental emergency, accounting for 7-14% of all dental emergencies [4]. Different etiological factors may explain the occurrence of abscesses in the periodontal tissues, such as pulp necrosis (endodontic, periapical or dentoalveolar abscesses), periodontal infections (gingival or periodontal abscess) [1], Pericoronitis (pericoronal abscess), trauma, surgery (iatrogenic), or foreign body impaction.⁵ The etiology of periodontal abscess can be iatrogenic in nature, due to post-surgical damage to the periodontal tissues, according to the 2017 American Academy of Periodontology (AAP) classification of periodontal diseases [2].

Iatrogenic injury is a comprehensive term that may be defined as 'harm, hurt, damage, or impairment that results from the activities of a doctor [6]. Iatrogenic injury is produced by either an inadvertent or erroneous treatment, or may be a result of either an act of commission or an act of omission by the therapist [7]. Dental iatrogenic treatment can produce injury either to the tooth or the Periodontium or both [7].

The etiology of periodontal abscess can be iatrogenic in nature. Dental procedures, such as restorations, endodontic therapy, fixed and removable prosthesis, orthodontic therapy, and oral and maxillofacial surgical procedures, may have the potential to become iatrogenic to periodontal structures if not carried out properly [7]. Surgical extraction of the third molar can often result in the development of a periodontal pocket distal to the second molar. This could delay healing, as the socket may become colonized by bacteria, leading to secondary abscesses. It may also cause tooth mobility, hypersensitivity, or the formation of a periodontal pocket [8], with associated recurring periodontal abscess, which can pose a diagnosis and treatment dilemma or challenges [3]. The history, diagnosis, and management of such a condition must be thorough to ensure appropriate treatment.

This case report describes a periodontal abscess affecting a tooth adjacent to a surgically extracted third molar performed two years prior to presentation. It highlights the diagnostic challenges encountered and details the technique employed by our team to successfully manage the condition.

Case Report

A case of 28 years old female presented in our clinic on account of pus discharge from her second molar on the lower right quadrant for a three-week duration. The patient had undergone a tooth extraction at a private clinic on the same side two years earlier, during which she adhered to all post-operative instructions and follow-up visits. However, the patient initially noticed pain a week before pus discharge distally, pain subsided following the use of amoxicillin. The patient continually expresses pus from the affected side for about three weeks. There is a history of a salty taste but no associated swelling. On dental history, this is the patient's third dental visit. Last visit was a year following surgical extraction for scaling and polishing.

The patient is a medical sales representative and the second of four children in a monogamous family. Her mother is a civil servant, and her father is a businessman. She brushes once daily using fluoridated toothpaste and a medium-textured toothbrush. There is no history of alcohol intake or tobacco use.

On extraoral examination, there is no facial asymmetry, submandibular lymph nodes are not tender and freely mobile, TMJs are bilaterally palpable, open, and close with no clicking sounds or jaw deviation. Intraoral examination reveals the presence of pus discharge on compression distal to tooth #47 (Figure 1). With a pocket depth of 8mm (distobuccal surface). No halitosis, other soft tissue appears clinically healthy. Oral hygiene appears clinically good. All teeth present except for teeth 18 and 48. Tooth #47 was neither tender nor discolored. On Investigation, an orthopantomogram (OPG) revealed a patchy radiolucency distal to tooth 47 (Figure 2).

A provisional diagnosis of periodontal abscess was made prior to discussion with the OMFS team to rule out osteomyelitis.

Treatment plan

The treatment plan involved exploratory open flap surgery with debridement. Informed consent was obtained from the patient before the procedure. The procedure entails the following steps; Three cartridges of Local Anaesthesia 2% lignocaine (1:100,000 epinephrine) were given using the inferior alveolar nerve block. On achieving anaesthesia, sulcular incision was done using blade no 15 on the buccal surface of 46,47, horizontal crestal incision distal to 47, and a relieving incision mesiobuccal to 46 to raise a full mucoperiosteal flap. On exposure, cortical bone (sequestrum) of about 0.5cm in its widest diameter was found, held to the remaining alveolar bone by granulation tissue (Figures 3 and 4). Debridement was done using a curette to remove the sequestrum and granulation tissues. Bony edges smoothed with bone file (Figure 5). Copious irrigation was done using normal saline and 0.2% chlorhexidine mouthwash. Flap re-apposed and sutured using 3.0 silk (3 sutures placed; 1 at the crestal region, 1 interdental, and 1 at the relieving incision. A simple interrupted suture was done at all suture points (Figure 6). Hemostasis is achieved by suturing. Postoperative instructions were provided, and the patient was prescribed the following medications: Capsule Clindamycin 300 mg every 12 hours for 5 days, Tablet Diclofenac 50 mg every 12 hours for 3 days, and Tablet Vitamin C 100 mg three times daily for 2 weeks. Patient was reviewed 1 week post-surgical intervention (Figure 7). There was no complaint of pus or clinical sign of discharge. The Operated site is healing satisfactorily. The patient was encouraged to continue warm saline mouth bath for another week.



Figure 1: Preoperative picture showing pus distal to 47.



Figure 2: Orthopantogram showing bone loss distal to 47.

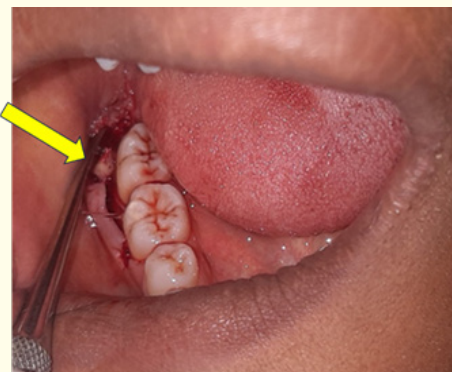


Figure 3: Mucoperiosteal flap raised to explore the 47, showing a bone fragment detached from the remaining alveolar bone.



Figure 4: Shows a picture of a bone fragment removed, measuring about 0.5cm in its widest diameter.

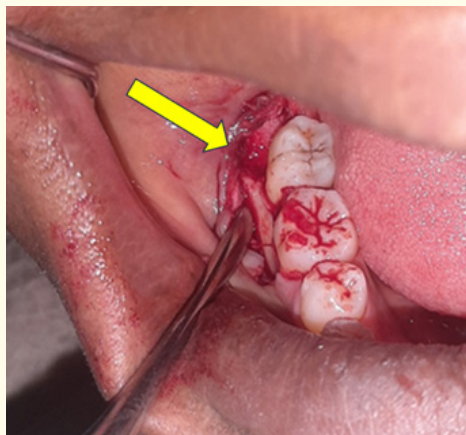


Figure 5: Defect in alveolar bone post-debridement.



Figure 6: Flap reapproximated and sutured.



Figure 7: One-week postop healing with no evidence of pus discharge.

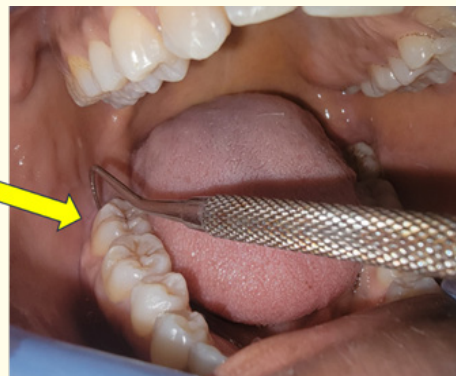


Figure 8: 6-month postoperative review, with PPD of 3mm.



Figure 9: 6-month postoperative review. OPG shows significant bone gain distal to 47.

Discussion

Periodontal abscess is the third most frequent dental emergency, representing 7-14% of all dental emergencies. Several iatrogenic factors which are associated with periodontal abscess have been identified [4], factors such as post-scaling periodontal abscess due to the presence of a small fragment of the remaining calculus that may obstruct the pocket entrance, or when a fragment of the calculus is forced into the deep, non-inflamed portion of the tissue. Post-surgical periodontal abscess: when an abscess occurs immediately following periodontal surgery [2]. It is often due to the incomplete removal of the subgingival calculus, perforation of the tooth wall by an endodontic instrument, the presence of a foreign body in the periodontal tissue (eg, Suture/pack), and treatment with systemic antibiotics without subgingival debridement in patients with advanced periodontitis [2].

The periodontal apparatus around an impacted or semi-impacted tooth is usually more predisposed to periodontal defects [9]. This is more pronounced due to surgical extractions, where a great amount of bone can be lost, and this could lead to a periodontal defect, which could lead to mobility or hypersensitivity of the second molar [8] and also a possibility of periodontal abscess, as in the case reported in this article. The occurrence of periodontal defects distal to the second molar is unpredictable and is regarded as a clinically significant complication, characterized by limited regenerative potential and a low likelihood of spontaneous healing [8]. There is consensus that the best way to prevent distal defects is the early extraction of third molars [10-12], but when this condition is not applicable, the risk of bone loss should be always taken in consideration. Richardson and Dodson revealed that after 2 years from the extraction of impacted third molars, 43.3% of the patients showed a PPD of ~7 mm [13]. However, no report has been made on periodontal abscess post-surgical extraction of the third molar, probably due to its rare occurrence.

Periodontal abscesses may also present as a clinical finding in cases of vertical root fracture, typically arising from chronic inflammatory processes along the fracture line [14]. Divya, *et al.* reported a case that was successfully managed with open flap exploration [15]. This case was approached with an open flap exploration where the fractured root was observed and the affected mesiobuccal root was resected. Divya *et al.* approach is similar to what was employed in the management of our patient.

In our case, we utilized open flap debridement to explore and remove the sequestrum and granulation tissue. Over a follow-up period of six months, there was no recurrence of pus or inflammation. Clinical examination revealed a reduction in PPD to 3 mm, and radiographic evidence showed significant alveolar bone formation, as shown in Figures 8 and 9, respectively.

Conclusion

This case report highlights that periodontal abscesses can develop as a postoperative complication of surgical extractions,

posing significant challenges in both diagnosis and management. Effective management of such rare cases requires accurate diagnosis and elimination of the underlying etiologic factors. This case underscores the importance of early recognition and proactive management to prevent further periodontal damage and ensure long-term healing. The collaboration between periodontal and oral maxillofacial units should be strengthened in this regard.

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